

# ICZM Framework Development: Proposal for SIDS

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## Abstract

Management of coastal systems has become the focus of many national and international projects. Coastal systems extend beyond jurisdictional boundaries and are affected by impacts of many local users and by decisions made by different levels of government. The management of coastal systems thus requires involvement of many bodies - the interconnected calling for an integrated approach. This paper presents a model for designing an effective, comprehensive Integrated Coastal Zone Management (ICZM) Framework for the small islands, including coastal profiles, with the goal of promoting ecologically sustainable use and development of the coastal zone. Furthermore, it contains an important component of addressing policy and strategy development related to ICZM at national level in line with the requirements of various relevant Conventions and Protocols of which the islands are party to. The strategy and plan to be formulated will contribute to ICZM strategies at national and regional levels. It will enable exchange of knowledge and experience in such management within the region, and assist in addressing coastal and marine resources management problems and their transboundary effects. The ICZM Plan shall provide the basis for protecting, restoring and preserving the coastal zones important and diverse coastal resources. The ICZM plan will set a number of objectives that shall be achieved in order to fulfill its aim. The objectives will then divided into several measurable and achievable targets. The Plan will outline the resources that will be targeted, who are responsible for actions, what actions are needed, how they will be managed and how to implement them, in order that sustainability is achieved and the available resources can benefit the future generations.

## *Key words:*

Coastal systems; Small Islands; Integrated approach; ICZM Framework; Sustainability

## 1. Introduction

Coastal zones are typified by a complex and dynamic interplay of natural, demographic and economic processes linked to each other in a network of mutual reciprocal influence. These processes are essentially dynamic cycles involving the exploitation of natural resources, the transformation and use of resources for demographic growth, social organization and economic production, and the generation of by-products and their dispersion back into the natural system. Coastal zones are currently experiencing intense and sustained environmental pressures from expanding socio-economic systems and a range of other driving forces (Turner et al., 1996). There is also a growing awareness of these pressures and their linkage to economic development, and increasing population growth. The unsustainable management of the coastal zone is reflected in the increasing pollution in coastal areas, in the physical degradation of coastal environments, and in the deterioration of coastal habitats and resources. Uncontrolled or excessive socio-economic growth increases the pressure on the natural sub-system and causes oppressive problems resulting in environmental degradation and eventually in the collapse of the coastal system or parts thereof. Protecting the coastal environment while accommodating growth pressures represent a particular major challenge to Small Islands Developing States (SIDS) (McConney et al, (2003). Current management of coastal zones in many SIDS is not subjected to any specific or holistic management programme. No broad vision and management principles exist for the coast as a whole as a result of fragmented, uncoordinated and to a degree reactive management approach. In most cases, the latter is driven by the existence of a number of departments with isolated responsibilities. What is needed is an institutional management framework that recognises the coastal zone as a specific entity requiring a coherent holistic management based on an integrated, continuous and iterative approach to correct and steer future policies in line with the requirements of various relevant Conventions and Protocols of which the islands are party to.

The management of coastal zones refers to the management of activities with significant impact on the coastal zones. Management of coastal systems has become the focus of many national and international projects. Coastal systems extend beyond jurisdictional boundaries and are affected by impacts of many local users and by decisions made by different levels of government. Coastal zone management therefore requires an integrated approach. The UNCED in Rio de Janeiro (1992) recognized the need for coastal states to 'commit themselves to integrated management and sustainable development of coastal areas and the marine environment under their jurisdiction' (Linden, O, 1995). The concept of integrated coastal management has evolved out of the United States' extensive coastal management practices that began in the early 1970s (Thai-Eng, 1993). Integrated coastal management is a continuous, iterative, adaptive, and consensus-building process comprised of a set of related tasks, all of which must be carried out to achieve a set of goals for the sustainable use of coastal areas (Bower, Ehler, & Basta, 1994).

This paper presents a model for a comprehensive Integrated Coastal Zone Management (ICZM) Framework for SIDS, which will establish goals, authorise and guide the ICZM Programme, with the purpose of promoting ecologically sustainable use and development of the coastal zone (Rughooputh, 2004). The case study of Mauritius will be used for illustration purposes. The strategy and plan to be formulated will contain an important component for addressing policy and strategy development related to ICZM at the national level in line with the requirements of various relevant Conventions and Protocols of which SIDS are party to. It will also enable exchange of knowledge and experience in such management within the region, and assist in addressing coastal and marine resources management problems and their transboundary effects. The ICZM Plan shall provide the basis for protecting, restoring and preserving the coastal zones important and diverse coastal resources. The ICZM plan will set a number of objectives that shall be achieved in order to fulfil its aim. The objectives will then divided into several measurable and achievable targets. The Plan will outline the resources that will be targeted, who are responsible for actions, what actions are needed, how they will be managed and how to implement them, in order that sustainability is achieved and the available resources can benefit the future generations.

## **2. Stages in the Generation of an ICZM Programme**

ICZM stresses on the need to improve horizontal integration of separate economic sectors and units of government with planning and management roles and also to improve the vertical integration of different levels of planning and management (government and non-government). ICZM's holistic perspectives further combine land, air and sea processes and exercises multi-disciplinary approach in analyses and assessments. In this way, management decisions will be based on a thorough knowledge of the coastal system and the dynamic forces that act upon it. Permanent and accurate monitoring of the changing circumstances and constant evaluation of the effectiveness of management efforts and actions are essential to correct and steer future policies. The approach therefore combines planning, management, education and research. The formulation of an action plan that will contribute ICZM strategies at national and international levels, thus calls for integration of five dimensions (Beatley et al., 2002; Bloye et al., 1993):

- intersectoral integration, ie. integration among different coastal and marine sectors
- intergovernmental integration (different levels of government),
- spatial integration, to connect land-based activities with coastal impacts;
- science management integration or the vital sharing of knowledge and information among the various disciplines concerned with coastal resource management;
- International integration to minimize international disputes over fishing activities, transboundary pollution, establishment of maritime boundaries, passage of ships, and other issues.

The ICZM programme development normally consists of various stages. These stages are by no means rigid and will, no doubt, involve feedback with revisions as new facts and opportunities emerge in later stages. The whole programme must therefore be flexible and adaptable.

**1) ICZM Policy Formulation:** Creation of a policy framework to establish goals and to authorise and guide the ICZM Programme; accomplished by executive and/or legislative action.

**2) ICZM Strategy Planning:** The ICZM Strategy Planning explores the potential impacts of the ICZM policy action – on resources and resources users, on income and jobs, on social and cultural well-being), where the benefits are evaluated, where a wide array of data is accumulated, and where a general strategy is created and recommendations are made for organization and administration of the ICZM programme.

**3) ICZM Programme Development:** Once policy makers accept the ICZM Strategy Plan, development of the ICZM Programme can begin and a detailed Master Plan for its implementation can be created.

**4) ICZM Plan Implementation:** Once the Master Plan is approved and a budget and staff are authorised, the Implementation stage can begin.

### **3. ICZM Project Strategies: A Participatory Approach based on Coastal Zoning**

A successful Integrated Coastal Zone Management should be based on the following eight principles (EC, 2000):

- A broad "holistic" perspective (thematic & geographic)
- A long term perspective
- Adaptive management during a gradual process
- Reflecting local specificity
- Working with natural processes
- Participatory planning
- Support and involvement of all relevant administrative bodies
- Use of a combination of instruments.

Focusing on management capacity rather than management plans or products the project adopts a process-oriented strategy in which actors in the existing institutional machinery are identified and activated in the coastal zone management process, i.e. the participatory approach. **It is local stakeholders in coastal development who will be called to carry out the key activities under the project**, supported however, as and when required, with technical assistance from foreign advisors and local consultants. The project therefore can require a shift in perception among institutional stakeholders from servicing projects by

providing information and dialogue to the latter. Only in this way can it be insured that local experience becomes fully incorporated in the management, that full local ownership is established for the management outcome and that capacity is built up to go through the planning and ensure other aspects of the management of the coastal development.

However, the complexity of the coasts necessitates **first and foremost** the classification of the coast into workable units (coastal zoning) so that the ICZM Planning is relevant and realistic and is more practical for implementation as well. This approach is currently the international trend.

#### **4. Task Force & Experts Working Group Concepts**

The most important single element in the ICZM Plan preparation is the Task Force System, which can be considered as the main engine to achieve the objectives of the project. It is the Task Forces, composed of representatives selected from government agencies, NGOs and other private stakeholders, who will carry out all key activities related to the preparation of an ICZM Plan (in assistance with advisors/consultants where and when required). The approach – a thematic one, which is critical for the sustainability of the project, amongst others, serves the following purposes:

- It locates and activates existing responsibilities, capacities and interests related or relevant to coastal zone management tasks and brings them together in an environment where problems, issues and actions can be addressed in a co-ordinating forum. In the process weaknesses or gaps in capacity and conflicts in interest and responsibilities will be identified, which will provide orientation as to where the ICZM project should focus its activities and resources.
- It provides a linkage and access to institutional expertise and experience in an issue specific context. This in turn will assist in identifying and mobilising the relevant resources potentially available to the project
- It will assist in the dissemination of information about and by the project as well as create awareness related to the coastal zone management issues. Both dissemination and awareness raising is much more efficient when it is “carried” through **active participation** as opposed to passive reception.
- It will promote the multi-disciplinary team approach required in true integrated management.
- It will provide ideal opportunities for training by doing. Training activities under the project will focus on Task Forces both through technology transfer and also in targeting candidates for dedicated training efforts either through workshops or other activities in Mauritius or through national, regional or overseas activities.
- It will initiate and reinforce the formation of an institutional and personalised ICZM network among individuals with responsibilities related to ICZM.
- It will make the ICZM Plan a “local” product generated through the work carried out by the existing government machinery and supported by the coastal zone

stakeholders. The ownership thus established will facilitate the implementation of the plan and significantly enhance enforcement.

- Last but not least, it will provide the manpower resources to carry out the numerous and demanding tasks required by the project. The resources available to the project in terms of the ICZM staff and its access to consultancy input is insufficient to implement the project, nor would a management plan prepared in such a context have much hope of being implemented.

The success of the ICZM project relies on the efficient mode of operation of the Task Force (TF) system. **Task Forces will work in parallel** – often sharing information to save time and effort. A number of Task Forces are proposed under the project and others may be activated for the ICZM Plan preparation/implementation and to address particular coastal management issues as they emerge. These include:

**Task Force A: CZ Determination, Zoning and Planning & Decision and Information Support System**

**Task Force B: Environmental Management & Risks**

**Task Force C: Coastal Protection and Natural Resource Enhancement**

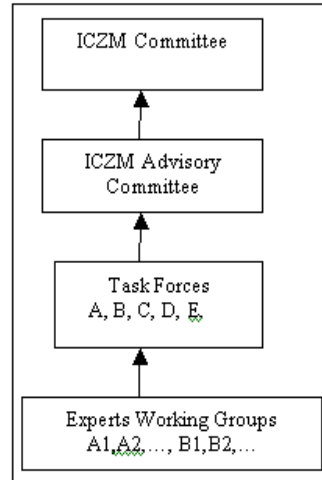
**Task Force D: Capacity Building, Education, Research and Awareness**

**Task Force E: Enforcement, Legal, Regulatory & Policy Issues**

**Task Force F: Financing Strategy Issues**

**Task Force G: Promotion of Sustainable Economic Development**

Each Task Force will further breakdown its activities (where appropriate) by setting up Experts Working Groups (EWGs) which consist of stakeholders directly relevant to the theme of the working groups. Figure 1 outlines a schematic representation of the net system of ICZM Plan preparation. The various Task Forces and EWGs are expected to continue their work (at a reduced frequency) even after the ICZM Plan has been prepared; the tasks thereon will be to implement, monitor and update. ICZM Advisory Committee will consist of local consultants. The Chairperson and Members of the EWGs will be members nominated by the Director of Environment in consultation with the Chair and Co-Chair of the respective Task Forces. All members of the ICZM Advisory Committee, Task Forces and EWGs will be remunerated for their work and will be provided with facilities. A short outline of the various Task forces is given below. ICZM Advisory Committee can introduce other Task Forces if the need is felt and Task forces, in consultation with the Advisory Committee can introduce other Experts Working groups if the need is felt.



**Figure 1: ICZM Plan Preparation Activity Line**

### **Task Force A: CZ Determination, Zoning and Planning & Decision and Information Support System**

The activities of this Task Force will be amongst others:

- to determine the landward and seaward boundaries for the area to be covered by the Coastal Zone Management Plan Document,
- to produce a coastal zoning for different uses,
- to anticipate and plan for new uses,
- to regulate public access to coastal and marine areas,
- to classify the coastal zones into manageable units based on the characteristics/functions of the coasts, catchment areas, etc.,
- to assist in the formulation of a spatial plan for the Coastal Zone using GIS/RS and DBMS techniques and environmental management and planning tools,
- to formulate a strategy for implementation of MIS/GIS in support of ICZM, and
- to update the coastal profile and coastal statistics

The immediate recommendations from this Task Force will be for inland and seaward boundaries to be defined and the classification of the coastal zones into manageable units (ICZM management boundaries). Boundaries for the ICZM programme should be located to capture, and enable resolution of, all major coastal issues identified. The inland boundary could be defined by a contour line/distance from coastline, with deviations according to local issues arising (e.g. existing or potential development areas). The seaward boundary to be recommended could be the EEZ (Exclusive Economic Zone), or some distance from coastline or the contour depth. These two boundaries could be further divided, where convenient, into tiers for varying types of management: marine and coastal water tiers, transitional area tiers, and The coastal zones could be classified on the basis of land-use for instance. Similar units can be grouped together taking due considerations to their locations.

**All the other Task Forces and their corresponding EWGs will work on the principle of the coastal zoning proposed by Task Force A.**

The Experts Working Groups for Task Force A will include:

- Boundary Determination
- Coastal Zoning and Spatial Planning
- Coastal Profile & Coastal Statistics (CP&CS)
- EIS & Documentation

**Task Force B: Environmental Management & Risks**

The activities of this Task Force will be amongst others:

- to conduct environmental assessments,
- to take into stock climate change impacts
- to conduct relative risk assessments,
- to establish a comprehensive overview of the existing environment management system as applied to Mauritius (for Task Force A),
- to rapidly assess the Coastal Environment including organising the baseline data for the Coastal Profile (for Task Force A),
- to consider strategies for environmental management to be used in development, planning and management in coastal areas, and
- to develop strategic EIA guidelines for potential sites for marinas, Ski Lanes and Bathing Areas

Important elements of environmental management are environment impact assessments, monitoring, resources accounting, conservation, enforcement, monitoring and environmental auditing.

The Experts Working Groups for Task Force B will include:

- Fisheries & Aquaculture
- Tourism
- Extraction & Exploitation, incl. Energy
- Industrialisation, Urbanisation and Transport
- Agriculture & Breeding
- Climate Change

**Task Force C: Coastal Protection and Natural Resource Enhancement**

The activities of this Task Force will be amongst others:

- to establish and enforce environmental standards,
- to protect and improve coastal water quality,

- to establish and manage coastal and marine protected areas,
- to conserve and restore coastal and marine environments (wetlands, mangroves, coral reefs, seagrass beds),
- to protect and enhance biodiversity in the coastal ecosystem,
- to identify sites of coastal erosion and apply appropriate remedial measures for shoreline protection (coastal defence),
- to protect public safety (impacts of natural hazards such as floods, cyclones, earthquakes, and tsunamis on life and property), and
- to introduce a Blue Flag Programme

The Experts Working Groups for Task Force C will include:

- Coastal Erosion and Climate Impacts
- Air & Water Quality, Pollution & Waste
- Biodiversity, Marine Parks and Nature Reserves, Archaeological Sites
- Beach Quality and Beach Management

#### **Task Force D: Capacity Building, Education, Research and Awareness**

The activities of this Task Force will be amongst others:

- to identify methods to strengthen existing institutions which will assist in developing and implementing the ICZM Plan,
- to develop a human resource programme and training needs to foster capacity building,
- to develop a CZ Education and Awareness Plan that aims to target the population, tourists and visitors and to identify/develop relevant training packages,
- to prepare the relevant coastal profile (for Task Force A), and
- to identify emerging areas for research and development.

The Experts Working Groups for Task Force D will include:

- Capacity Building
- Education, Research and Awareness

#### **Task Force E: Enforcement, Legal, Regulatory & Policy Issues**

The activities of this Task Force are:

- to review relevant policies, laws, regulations, codes and agency mandates and to prepare the relevant coastal profile (for Task Force A),
- to prepare an ICZM policy that identifies legislative barriers and recommends legal amendments,
- to determine the carrying capacity of the coastal ecosystems – that is to define acceptable limits of coastal environmental degradation,

- to come up with a coastal resources conservation policy in an effort to achieve sustainability of our resources and long-term protection of our natural assets,
- to harmonize and balance existing and potential uses, and address conflicts among coastal and marine uses,
- to identify/monitor permitted activities for designated zones for different uses,
- to identify areas of ethical issues on research and development, and
- to develop a more dynamic coastal defense policy.

The Experts Working Groups for Task Force E will include:

- Coastal Conflicts
- Ethical Issues
- Security Issues

### **Task Force F: Financing Strategy Issues**

The principal activity of this Task Force is to search for options for securing sources of finance to adequately plan and carry out activities that will maximize the economic and social benefits obtained from the coastal zone.

### **Task Force G: Promotion of Sustainable Economic Development**

The activities of this Task Force are to promote appropriate uses of coastal and marine areas with regard to the following:

- Artisanal fisheries
- Industrial fisheries
- Mass tourism including ecotourism
- Marine recreation
- Marine aquaculture
- Marine transportation
- Port development
- Mineral exploitation
- Marine research for industry (e.g. pharmaceuticals, bioprospecting etc)
- Access to genetic resources

The Experts Working Groups for Task Force G will include:

- Fisheries
- Tourism
- Marine industry

Focus Group Meetings, Seminars, and Workshops will be organised with all major stakeholders for the development of the Strategy Plan.

## **5. ICZM Plan and the Financial Implications**

The project is designed to be implemented in three phases:

### **Phase 1: *Coastal Profile Development (6 months)***

With duration of approximately 6 months, this phase primarily focuses on generating the Coastal Profile of the country based upon existing data and information.

#### **ICZM Advisory Committee/TF\_A:**

To submit to ICZM Committee consolidated reports on the ‘**Coastal Zone Determination**’ and ‘**The Classification of the Coastal Zones into Manageable Units**’ within 1 month of the start of the project. A Workshop will be held to present these two reports.

#### **TFs B to G:**

To submit to TF\_A (through ICZM Advisory Committee) consolidated reports on the Coastal Profile within 4 months of the start of the project.

#### **ICZM Advisory Committee/TF\_A:**

To submit to ICZM Committee a consolidated report on ‘**The Coastal Profile**’ within 6 months of the start of the project. A Workshop will be held to present the Coastal Profile for the country.

### **Phase 2: *Strategy Planning (+ 7 months)***

Phase 2 will be the period where the ICZM Strategy Planning Process will be carried out leading to the drafting of the first ICZM Strategy Plan; Phase 2 will last a further 7 months. The Strategy Planning discusses above mainly explores the potential impacts of the ICZM policy action (on resources and resources users, on income and jobs, on social and cultural well-being), where the benefits are evaluated, where a wide array of data is accumulated, and where a general strategy is created and recommendations are made for organization and administration of the ICZM programme.

#### **EWGs:**

Except for the coastal zone determination and classification of coasts into manageable units, the EWGs must submit to the respective Task Forces, consolidated reports within 8 months of the start of the project.

#### **TFs:**

To submit to the ICZM Advisory Committee consolidated reports within the next 2 months. Each Task force will hold a seminar (during a Seminar Week) to discuss the major problems on challenges with respect to coastal zone management.

**ICZM Advisory Committee:**

The ICZM Advisory Committee will prepare the ICZM Plan and formulate achievable targets. Proposed measures will be phased into short, medium and long term. To submit to ICZM Committee a '**Draft Report of the National ICZM Plan and associated Guidelines**' within the next 3 months. A Workshop will then be held to present the interim National ICZM Plan.

**Phase 3: *ICZM Master Plan (+ 3months)***

This period of 3 months duration will be used to finalise the ICZM Plan or Programme with a detailed Master Plan for its implementation. The Plan will be reviewed by an international consultant who will carry out a SWOT analysis with their recommendations.

**ICZM Committee:**

To finalise the ICZM Master Plan and to consider follow-up activities.

Once the final Master Plan is approved and a budget and staff are authorised, the Implementation can begin. Below is an outline of some of the activities in the three phases:

As mentioned earlier, all members of the ICZM, ICZM Advisory Committee, Task Forces and EWGs should be remunerated for their work. To ensure a wider participation, any individual can serve on no more than two committees of the Task Forces/EWGs. Members of the Advisory Committees can participate in the ICZM Committee (but they will not be remunerated). However, they cannot participate (except in advising capacity) in any Task Forces/EWGs. The Chairperson and Members of the EWGs will be members nominated by the Director of Environment in consultation with the Chair and Co-Chair of the respective Task Forces. Remuneration for Task Force and EWG members will be a monthly allowance, irrespective of the frequency of meetings – for 13 months.

## 5. Case of Mauritius

The background for the ICZM framework is the unsustainable management of the coastal zone of Mauritius as reflected in the increased pollution experienced in coastal areas, in the physical degradation of coastal environments, and in the deterioration of coastal habitats and resources. The following are the major causes of these environmental problems: (i) a lack of coherent and integrated management and policies (ii) a lack of awareness and public participation, and (iii) weak enforcement of regulatory measures. With respect to the ICZM Policy Formulation, the Ministry of Environment has already created an ICZM Division. However, this division is currently not fully operational and is inadequately staffed and equipped and lacks the guidance of a CZM strategy and a working plan. The *long term interest and goal for the Coastal Zone* will be to maintain or increase its sustainable economic and ecological potential, hence the Sustainable/Integrated Management of the Coastal Zone. To develop the ICZM framework, seven Task Forces (A to G) will be mobilised (Table 1). Each Task Force consisting of, on average, 17 members including the two Chairs. Each EWG will consist of, on average, 7 members. It is estimated that the whole project for the ICZM Plan preparation comes to around US\$ 0.6M for Mauritius (compared to US\$1.67M). The Development of an ICZM Framework for Mauritius reported in this paper involves stages 2) and 3) discussed above

## 6. Conclusions

SIDS could well use the stages and methods used to develop this ICZM Framework in this paper in their attempt to come up with ICZM plans and strategies. SIDS should first consolidate and integrate existing coastal initiatives and legislation, management plans and policies to ensure that they are all aligned within a common framework and goal. The intention is to build on existing initiatives and work completed in the past to come up with the ICZM framework to develop a systematic plan of action, which will ensure sustainable economic and ecological potential, sustainable management of the coastal zone, establishment of coherent and integrated management and policies for the coastal zone, raised awareness & increased public participation in coastal management; and strengthened enforcement of regulations for coastal zone development. In the case of Mauritius, the financial implication for the development of this ICZM framework is definitely far less than would otherwise be the case if consultants were to handle the whole initiative. Also, this method will definitely secure commitment of all relevant stakeholders for the implementation of the plan (Implementation Stage). If all SIDS accepts the proposed framework, the thematic lay-out of the action plan can be easily translated to organized SIDS activities in areas such as capacity building, research, disaster preparedness, coastal zone management, awareness, etc.

**Table 1: Composition of the Seven Task Forces (a proposal)**

	TF A	TF B	TF C	TF D	TF E	TF F	TF G
AHRIM	*	*	*	*		*	*
Beach Authority	*	*	***	*	*	*	*
Central Statistical Office	*						
Institute of Environment and Legal Studies				*	*		
Mauritius Oceanographic Institute	*	*	*	*	*	*	*
Mauritius Ports Authority	*	*	*		*	*	*
Meteorological Services	*	*	*	*		*	
Ministry of Agriculture	*	*	*	*	*	*	*
Ministry of Economic Devt and Planning							***
Ministry of Education & Sc. Res.				***			
Ministry of Environment	**	***	*	**	**	**	*
Ministry of Finance		*	*	*	*	***	*
Ministry of Fisheries	***	**	**	*	*	*	*
Ministry of Health & QL		*	*	*	*	*	*
Ministry of Housing & Lands	*	*	*	*	*	*	*
Ministry of Justice	*	*	*	*	***	*	*
Ministry of Local Government,...	*	*	*	*	*	*	*
Ministry of Public Infrastructure,...	*	*	*	*	*	*	*
Ministry of Public Utilities	*	*	*	*	*	*	*
Ministry of Tourism	*	*	*	*	*	*	**
National Coast Guard	*	*	*	*	*	*	*
NGO Representative (one of) #	*	*	*	*	*	*	*
Police Department	*	*	*	*	*		
Rodrigues Environment Committee	*	*	*	*	*	*	*
University of Mauritius	*	*	*	*	*	*	*

# NGO: *Forever Blue, Friends of the Environment, Mauritius Marine Conservation Society, Mauritius Scuba Diving Association, Mauritius Underwater Group, World Wildlife Fund*

\*\*\* Chair

\*\* Co-chair

\* Member

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